

Environmental Law NEWS

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Editor's Note...

by *Alexander "Sandy" Crockett*

In this Winter 2012-2013 issue of *Environmental Law News*, we are pleased bring you a selection of articles that highlights the exciting breadth of issues we confront as California environmental lawyers.

The issue opens with a review of California's efforts to promote local renewable power generation by **Bob Weisenmiller**, Chair of the California Energy Commission, and two of the Commission's principal experts in this area, **Kevin Barker** and **Heather Raitt**. The article explores Governor Brown's commitment to achieving 12,000 MW of new distributed renewable generation by 2020 to help achieve the state's greenhouse gas reduction and energy reliability goals—and the current efforts by the Energy Commission and its sister agencies to bring that commitment to fruition. This is followed by a commentary on recent judicial developments regarding the public trust doctrine by **Jan Stevens**, the former head of the Land Law Section of the California Attorney General's Office and one of the state's premier public trust authorities. Mr. Stevens reviews the evolution of the public trust doctrine and considers whether the California courts may be backing off from earlier decisions that established strong support for public trust protection of the state's natural resources. Next up is an article by Los Angeles attorney **Julia Stein** addressing the twin issues of water allocation and wastewater disposal, two important challenges facing the development of hydraulic fracturing—or "fracking"—for the production of natural gas. Ms. Stein explores how fracking operators can recycle wastewater back into the fracking process to achieve a "win-win" solution that addresses both of these challenges at the same time. From fracking, we move to on to a review of Proposition 65's warning requirements as they relate to food products by OEHHA Chief Counsel **Carol Monahan-Cummings**. Ms. Monahan-Cummings explores how OEHHA's implementation efforts are helping businesses and the public at large in balancing the essential nutritional benefits of food with Proposition 65's mandate to warn consumers about potential toxic exposures.

We hope that all members of the Environmental Law Section will find something of interest in this selection of articles from leaders in the field of environmental law no matter what specific area their practice focuses on.

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Local Renewable Power for a Clean Energy Future

by Kevin M. Barker,* Heather Raitt,[†] and Robert B. Weisenmiller, Ph.D.[‡]

In his 2012 State of the State address, Governor Brown stated that “California is leading the nation in creating jobs in renewable energy and the design and construction of more efficient buildings and new technologies.” This commitment to clean energy was echoed by President Obama in his 2012 State of the Union remarks calling for Congress to set “a clean energy standard that creates a market for innovation.” As California’s lawmakers, energy agencies, environmentalists, energy providers, and citizens attempt to put these commitments into practice, they need to strike a balance between cost, reliability, and environmental stewardship in the energy sector. Juggling these sometimes competing objectives can be challenging at best.

One attractive solution is distributed renewable energy—power generated at the local level from sunlight, wind, water, biomass, and the earth’s heat. Distributed renewable power generation holds the promise of helping to address some of the state’s biggest challenges, including reducing greenhouse gases, advancing electricity system reliability, and creating jobs. In this article, we look at distributed renewable generation in the context of California’s current energy landscape, focusing on what is meant by local renewable power, how much more the state aims to install, and what the state is doing to move forward to meet its goals.

ASSEMBLY BILL 32: CALIFORNIA’S GREENHOUSE GAS REDUCTION GOAL

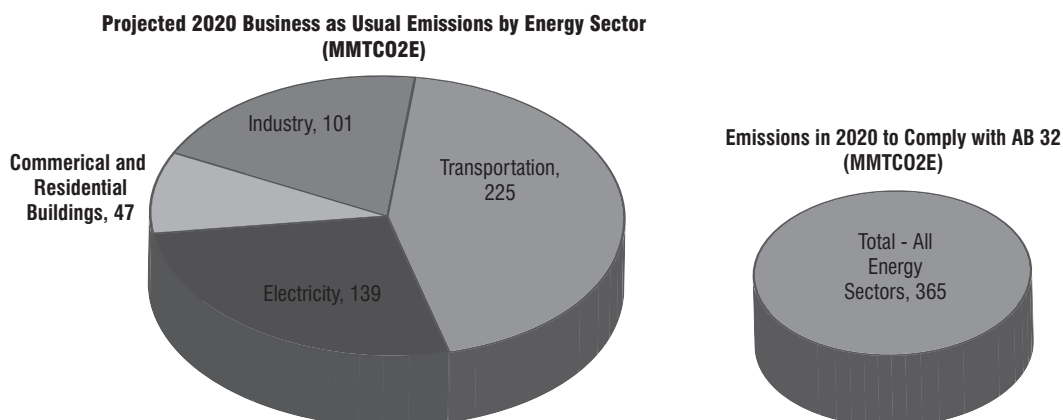
One of the biggest drivers in energy policy today is the need to reduce greenhouse gas emissions to help address global climate change. As the world’s ninth largest economy, California plays a key role in this effort. Since energy accounts for more than two-thirds of all

greenhouse gas emissions, energy policy is once again at the forefront of national concerns, after having previously captured national attention during the oil embargo in the 1970s and the energy crisis in 2001. California has stepped up to the challenge with the passage of Assembly Bill 32 (Núñez), the Global Climate Change Solutions Act of 2006 (AB 32).¹ This monumental greenhouse gas reduction law places a mandate on carbon emitters to reduce emissions to 1990 levels by 2020. Renewable resources will play an important role in meeting this challenge because they generate energy without producing greenhouse gases.

The four major emission sectors—transportation, electricity, commercial and residential buildings, and industry—are targeted by the California Air Resources Board to reduce greenhouse gas emissions to 365 million metric tons of CO₂-equivalent (MMTCO₂e) by 2020, a reduction of 147 MMTCO₂e compared to projected emissions of 512 MMTCO₂e by 2020 if California continues on a “business as usual” course. Key elements of California’s efforts to reduce greenhouse gas emissions include:²

- Advancing energy efficiency,
- Developing a cap-and-trade program,
- Achieving a 33 percent renewable electricity portfolio, and
- Reducing transportation emissions.³

The magnitude of the reductions needed to reach AB 32’s goal can be seen graphically in the chart below, which compares projected 2020 emissions under the “business as usual” scenario with the emissions level mandated by AB 32.



Cap and Trade

California's cap-and-trade program sets a statewide limit on sources responsible for 85 percent of California's greenhouse gas emissions, which will gradually be lowered to bring down emissions from these capped sources. The program establishes an economy-wide price signal to drive long-term investment in cleaner fuels and more efficient energy use.⁴ Companies do not have individual emission caps; instead, the program is designed to provide covered entities the flexibility to use the lowest-cost options to reduce their emissions as total allowable emissions decline over time. The program starts in 2013 for electric utilities and large industrial facilities. Transportation fuel and residential and commercial natural gas sectors will be added beginning in 2015.

Renewable Portfolio Standard

Achieving the 33 percent Renewable Portfolio Standard (RPS) is another key strategy to reduce the state's greenhouse gas emissions. Displacing fossil fuel generation with renewable electricity will help reduce emissions from the electricity sector, which currently accounts for close to one third of all emissions from the energy sector.

Signed by Governor Brown in April 2011, Senate Bill X1-2 (Simitian, Kehoe, and Steinberg), the California Renewable Energy Resources Act, codified a goal of serving 33 percent of California's electricity retail sales with renewable energy by 2020.⁵ This calls for approximately 43,000 gigawatt-hours per year more renewable generation than was needed to meet the prior goal of 20 percent by 2010.⁶

The program requires electric investor-owned utilities (IOUs), electricity service providers, publicly owned utilities, and community choice aggregators to procure electricity from eligible renewable energy resources as a percent of retail sales and make reasonable progress to RPS program goals as follows:

- 20 percent on average for the compliance period January 1, 2011, to December 31, 2013.
- 25 percent by December 31, 2016.
- 33 percent by December 31, 2020, and each year thereafter.

As of 2010, renewable generation made up 16 percent of California's retail electricity sales. The IOUs, comprised of Pacific Gas and Electric, Southern California Edison, and San Diego Gas and Electric (SDG&E) collectively reached 20 percent renewable in 2011. SDG&E's success in reaching its RPS target was especially notable, as the company increased its renewable procurement from 12 percent in 2009 to 20 percent in 2011.

ENERGY RELIABILITY AND SECURITY

Another area of paramount concern is ensuring a reliable and secure energy system. While the total amount of renewables is increasing, controllable renewable generation—resources that can operate 24 hours a day, every day, except for maintenance outages—has been on the decline since 2004.⁷ Controllable resources have the ability to “load shift” and “load follow”, i.e., to ramp up and down in response to changes in demand. These resources include biomass, geothermal, and to some extent small hydropower (California generally does not consider hydropower greater than 30 MW to be renewable, with some exceptions).⁸ But development of solar and wind has outpaced other renewable resources and accounted for all 830 MW of renewables that came online in 2011.⁹ Solar and wind resources vary depending on season, time of day, and weather, and thus are considered intermittent resources. Intermittent resources are much more difficult to integrate into the electrical grid and require flexible resources to “firm” them to a steady electricity supply. Flexible resources can ramp up or down as needed to respond to changes in generation or load and can be used to integrate intermittent renewable resources. Flexible resources include natural gas peakers, steam turbines, hydropower,¹⁰ and storage on the supply side; and demand response on the demand side. Integrating intermittent resources will ultimately increase the stress on California's aging electricity system. After dealing with the energy crisis in 2001, Californians will not tolerate long-term outages or rolling blackouts, so it is imperative that increased deployment of renewable resources does not compromise reliability. Flexible resources and transmission and distribution upgrades will be needed, the cost of which will be borne by California ratepayers.

Although integrating intermittent renewables presents a challenge from a reliability standpoint, localized renewable resources can also provide reliability benefits. In the first quarter of 2012, Twenty-Nine Palms Marine Base experienced numerous blackouts, which affect military training.¹¹ These blackouts were due to the transmission-constrained isolation of the base. Distributed generation (DG), otherwise known as localized electricity generation, can help meet demand in such transmission constrained communities.

Further, the military is interested in renewable resources as a tool to help protect the armed forces. It is estimated that supplying fuel for front line power generation accounts for one casualty for every forty-six resupply convoys in Afghanistan. This suggests that refueling missions can be expected to result in the death or injury of about twenty soldiers a year.¹² Using locally available energy that does not need to be trucked can save lives. As noted by George P. Shultz, formerly Secretary of State and now the Thomas W. and Susan B. Ford Distin-

guished Fellow at Stanford University's Hoover Institution, a distributed power system "offers the potential for more reliable, secure, and green energy. It can encompass everything from fuel cells providing electricity and clean water to a remote army outpost in Afghanistan to solar panels on the roof of a home in Arizona."¹³

The military has already started to take advantage of these benefits. For example, the U.S. Marines use a camouflage pouch with solar cells on the reverse side. When not needed for camouflage, the troops use the pouch to recharge their equipment. Military pilots use solar chargers to extend the life of battery transponders. The Marines have deployed flexible solar technologies as part of tents that can power computers, radios, and other electronics. In addition to displacing heavy batteries, these "solar tents" operate silently, avoiding noise that could alert insurgents to the military presence. And in Afghanistan, two patrol bases have been able to operate on 100 percent renewable energy; the Marines have decided to further deploy this technology in all of their bases in the Helmand province.¹⁴ As these examples show, renewables are increasingly being used by the military to advance security and save lives.

JOB CREATION AND ECONOMIC GROWTH

Policy makers must also recognize the current economic hardships when developing energy policy and look for opportunities to create jobs. Since late 2008, California has been entrenched in a global recession, with some areas hit much harder than others. The central valley and inland empire witnessed up to one third of their population unemployed. Fresno's construction and building industry collapsed, with a 60 percent reduction in building permits since 2008.¹⁵ Although Fresno's unemployment rate was a staggering 30 percent, what was most remarkable was that Fresno also had the greatest amount of job opportunities in the nation.¹⁶ How could a county with a so many job opportunities also have such high unemployment? The answer is simple: the workforce was not trained for the jobs offered. Education is key. California's workers and students need to be trained and educated for the positions offered.

The Energy Commission has been investing in workforce development to ensure that workers are trained to help California reach its energy policy goals. In partnership with several other state agencies, the Energy Commission in 2009 launched the Clean Energy Workforce Training Program, the largest state-sponsored workforce development effort of its type in the nation, with \$20 million of State Energy Program (SEP) and American Recovery and Reinvestment Act (ARRA) funds. The program, which ended in early 2012, prepared 8,200 unemployed, underemployed, and incumbent workers for careers in energy efficiency, water efficiency, and renewable energy. SEP and ARRA funds were also

used to upskill 10,000 contractors to perform residential retrofits under the Energy Upgrade California program. To help build clean energy career pathways for students in grades 10 through 12, in 2008, the Energy Commission invested \$12 million from its Public Interest Energy Research Division into the Partnership Academies' Green/Clean Initiative through the Department of Education. The Partnership Academies integrate academic and career technical education, business partnerships, mentoring, and internships. In 2011, the Energy Commission partnered with the Department of Education to develop guidelines for the next generation of academies, the Clean Technology and Renewable Energy Partnership Academies. These academies include grades 9 through 12 and incorporate career technical education specifically related to California's clean energy policy goals. As State Senate President pro Tempore Darrell Steinberg (D-Sacramento) said, providing funding for the program "is a rare opportunity in very tough fiscal times to celebrate an investment in the future of our state and the lives of young people."¹⁷

Nationally, the clean-energy economy employs more people than the fossil-fuels and biotech industries, according to a Brookings Institute report,¹⁸ and is growing. Between 2003 and 2010, the renewable sector added approximately 50,000 jobs in the solar thermal, solar PV, wind power, biofuels, fuel cell production, and smart grid industries. Four of the five fastest growing clean-tech segments in percentage terms were in the renewable energy sector.¹⁹ It is imperative that California take the steps necessary to support this growth in the state, and also to ensure that its workforce is prepared to fill the jobs created by it.

DISTRIBUTED GENERATION AS A SOLUTION TO THESE POLICY CHALLENGES

Recognizing that investments in renewable technologies create jobs, Governor Brown put forward his Clean Energy Jobs Plan.²⁰ The plan's ambitious goals include installing 12,000 MW of localized generation and 8,000 MW of utility-scale renewables by 2020, and 6,500 MW of combined heat and power by 2030. Through Governor Brown's leadership, California has set the nation's most aggressive goal for increasing renewable energy capacity at the local level.

What Is Distributed Generation?

For the purpose of counting towards the Governor's goal of 12,000 MW of localized distributed generation, a project must meet the following criteria:²¹

- The project must involve fuels and technologies accepted as "renewable" for purposes of Renewable Portfolio Standard;²²
- The project must be up to 20 MW in size; and

- The project must be located within California's low-voltage distribution grid or supply power directly to a consumer.

The current approach is to count existing installed capacity towards the 12,000 MW goal if it meets these criteria. The Administration has established the 12,000 MW goal to apply only to renewable energy, with separate goals for clean natural gas and storage.

How California Can Achieve the Goal of 12,000 MW of New Localized Distributed Generation

The Governor's Office is preparing a DG Roadmap to help identify where DG is installed, where it needs to go, and the actions needed to reach the goal. Key questions the roadmap will attempt to answer include:

- What renewable energy power projects are counted toward the Governor's goal?
- How much generation is already operating, pending, or authorized?
- How should the remainder of the Governor's 12,000 MW goal be achieved?
- How do we make the expansion of local renewable energy more efficient, effective, and equitable?

When exploring these questions, it is important to recognize that California has used renewable resources to help meet its electricity needs for more than a century. Renewable energy represented a relatively small portion of the state's electricity mix in the late 1970s when Congress enacted the Public Utility Regulatory Policies Act (PURPA). A key element of PURPA policy was diversifying and strengthening domestic electricity production by encouraging the development of cogeneration and renewable energy facilities. Under Governor Brown's first administration, PURPA was implemented in California by the California Public Utilities Commission (CPUC), which ordered utilities to establish standard contracts for buying electricity from alternative suppliers ("qualifying facilities") at a price equal to the buyer's full avoided cost.²³ These contracts resulted in thousands of megawatts of new cogeneration and renewable generating capacity by the early 1990s.

Beginning in 1985, however, standard offer contracts were suspended, which—combined with declining fossil fuel prices in the 1990s—led to a drop in renewable development. In addition, as PURPA contracts reached the end of their terms and expired, they were not renewed. Today, California projects that come online under PURPA typically must compete in the wholesale market, with wholesale projects selling power to a utility through a power purchase agreement and the energy then being resold to end-use customers.

Another DG business model that provides an alter-

native to having to go through the wholesale market is self-generation. With self-generation, the customer owns or leases a renewable generation system to help offset its electricity needs. Many self-generation customers can benefit from net energy metering, or the process of using the grid as de facto storage when their system is producing more power than they are using on-site. With net energy metering, electric meters spin forward to count kilowatt hours consumed from the grid, but also spin backward when the DG system produces excess energy that is not consumed on-site and is fed back to the distribution grid. Net energy metering customers receive a credit set at the retail rate for every kilowatt hour of excess energy produced.

California has made incredible leaps in building out the self-generation market within the past ten years through programs like the Emerging Renewables Program²⁴ administered by the Energy Commission, the Self-Generation Incentive Program²⁵ administered by the CPUC, and the SB 1 program²⁶ with components administered at the CPUC, publicly owned utilities, and the Energy Commission. California is the clear national leader in deploying self-generation capacity, with about 105,000 solar PV systems totaling about 1,070 MW of capacity currently installed in the state. The next closest state, New Jersey, has only 7,500 installations. California's total is roughly 100,000 more than New Jersey's, or 14 times the number of installations. The top three cities in California for installed capacity are San Diego, Los Angeles, and San Jose, with 37, 36 and 31 MW installed, respectively. If San Diego was a nation, it would be in the top 25 nations for installed solar PV capacity.²⁷ Since 2009, Sacramento, Los Angeles, San Francisco and Bakersfield have installed the most capacity as a percent of total installed capacity.

In total, California has roughly 3,000 MW of DG installed throughout the state, of which 1,900 MW are wholesale DG (WDG). The Central Valley has a significant amount of solar PV and biomass projects. Higher-density areas like the Bay Area and the South Coast (Los Angeles, Orange and San Diego counties) have a high concentration of landfill gas projects. The Sierras in the northeastern part of California have many biomass projects.

Further, the California legislature and the CPUC have approved additional programs to help get us closer to realizing the 12,000 MW goal. The feed-in tariff adopted under Senate Bill 32 (McLeod),²⁸ the biomass feed-in tariff recently approved under Senate Bill 1122 (Rubio), the California Solar Initiative, the Renewable Auction Mechanism,²⁹ the utilities' solar PV programs,³⁰ Southern California Edison's renewable standard contracts,³¹ the Self-Generation Incentive Program, and the Emerging Renewable Program have cumulatively led to an additional 1,700 MW of pending projects.³² Addi-

tionally, about 4,300 MW are authorized under existing programs, although funding may not be available to fully implement some programs. In total, the gap between the 12,000 MW goal and what has been authorized, pending, or installed is roughly 3,000 MW.

As California works toward installing projects through current programs, the state should build off lessons learned. The following are questions to explore when evaluating the existing programs:

- Which add reliability and/or avoid transmission?
- Which are most effective in cost containment?
- Which result in the most generation quickly?
- Which are administratively efficient?
- Which support other state policies (e.g., RPS, Demand Response)?
- Which advance a diversity of resources?

By answering these questions, regulators and policymakers can identify which programs to expand to reach the targets in the most effective way.

Another approach to reaching the statewide goal is to set regional targets that build up to 12,000 MW. As part of a multi-tiered approach to reaching the goal, the Energy Commission has been developing regional targets at the local level to break the goal into more manageable parts. Local jurisdictions play a critical role in expanding DG, in large part because all of the projects will be permitted through local government authorities. The Energy Commission continues to work with local governments and other stakeholders to refine these regional targets.

The state is also attempting to lead by example and increase renewable generation on state property. In 2009, the Energy Commission developed a Memorandum of Understanding among nine state agencies and public corporations to advance renewable energy development on state property.³³ The Energy Commission's report *Developing Renewable Energy on State Property* set a goal of developing 2,500 MW of renewable energy on state property by 2020.³⁴ Achieving this goal will help the state meet the 33 percent RPS and the Governor's goal of installing 20,000 MW of renewables by 2020. Currently, about 60 to 70 MW of self-generation projects are underway at the California Department of Corrections and Rehabilitation, CalTrans, and the university systems. The greatest potential for development is for wholesale generation on California State Lands Commission properties.

The CEC's Integrated Energy Policy Report

California's ambitious energy and environmental policy goals are important strategies to promote energy

independence, increase energy reliability and safety, reduce statewide greenhouse gas emissions, and help create clean energy jobs. The Energy Commission has addressed these strategies in its *Integrated Energy Policy Report (IEPR)*, a major policy report that the Commission publishes in odd-numbered years, with updates in even-numbered years. The Commission's *2011 Integrated Energy Policy Report (2011 IEPR)* discussed issues associated with the state's clean energy goals to increase energy efficiency, renewable electricity, DG, combined heat and power, and alternative and renewable transportation fuels. In addition, the report discussed the important roles that interagency coordination, and research and development will play in achieving these goals.³⁵

A major part of the development of the *2011 IEPR* was an evaluation entitled the *California Renewable Power: Status and Issues Report*, in which the Energy Commission assessed progress towards meeting the state's renewable energy goals and the issues that must be addressed to develop clean, renewable electricity generation.³⁶ Planning, permitting, and environmental issues can delay or jeopardize project development and increase development costs. The Report sets a platform for the work the Energy Commission pursued in 2012 on renewable energy by identifying five strategies for renewable development:

1. Identify and prioritize preferred geographic areas in the state for renewable development.
2. Evaluate the costs and benefits of renewable energy projects and their impact on retail electricity rates.
3. Minimize interconnection costs and time, and strive for cost reductions and improvements to integration technologies, including storage, demand response, and the best use of the state's existing natural-gas-fired power plant fleet.
4. Promote incentives for renewable development that create in-state jobs and support in-state industries, including manufacturing and construction.
5. Promote and coordinate existing state and federal financing and incentive programs.

The Energy Commission is currently developing the *2012 Integrated Energy Policy Report Update (2012 IEPR Update)*.³⁷ The focus of the *2012 IEPR Update* is to create a Renewable Action Plan to advance the state's renewable goals, based on the issues identified in the *California Renewable Power: Status and Issues Report*. The Energy Commission is working with stakeholders and its sister agencies to develop the *2012 IEPR Update* and has held 10 workshops to date.³⁸ Developing the

2012 *IEPR Update* is an important step, as the document is intended to be a roadmap for ongoing efforts to advance renewables in the years to come. Utilities, renewable generators, the state, local governments, and federal partners must continue the progress that has been made to date towards a cleaner energy system that provides energy security and reliability and helps propel technological innovation towards a green economy.

ENDNOTES

- * Kevin Barker is Chief of Staff to Chair Robert B. Weisenmiller of the California Energy Commission. His responsibilities for the Chair are nuclear energy, renewables, electricity—supply and demand, transmission, natural gas issues, Integrated Energy Policy Report, and research and development. Before becoming Chief of Staff, Mr. Barker worked as the Chair's policy advisor for renewables, electricity, and research and development. Mr. Barker got his start at the Energy Commission in the Renewable Energy Office and has worked for the California Energy Commission for 5 years. He has been a long time advocated for sustainability efforts and has enjoyed tutoring adolescents in math and the environment. He graduated from University of California Irvine in 2005 with Bachelor Degrees in Environmental Policy and Planning and Film and Media Studies.
- † Heather Raitt is the Assistant Executive Director for Renewables and Climate Change at the California Energy Commission. With over 20 years of experience at the Energy Commission, her work includes serving as technical director of the Commission's renewable energy program, leading the Commission's implementation of the state's Renewables Portfolio Standard from 2003 through 2007, conducting transportation analysis, and developing measures to reduce greenhouse gases. Ms. Raitt has a Bachelor of Science in Resource Science from University of California Davis.
- ‡ Robert B. Weisenmiller, Ph.D., is Chair of the California Energy Commission. He was appointed to the Commission by Governor Arnold Schwarzenegger in January 2010 and by Governor Jerry Brown in January 2011. In February 2011, Governor Brown appointed Commissioner Weisenmiller to Chair of the Energy Commission. He fills the Engineer/Scientist position on the five-member Commission, and brings more than 30 years energy experience to the Commission including expertise in electricity and gas markets and California regulatory policies. Chair Weisenmiller focuses on issues including the Energy Commission's budget and management; legislative and intergov-

ernmental matters; and research, development and demonstration. Before his appointment, Chair Weisenmiller was a co-founder of MRW & Associates, and was also co-founder and Executive Vice President of Independent Power Corporation. Chair Weisenmiller's career also included a previous period of public service with the Energy Commission as Advisor to Commissioner, Manager of the Special Projects Office, and Director of the Office of Policy and Program Evaluation in the period between 1977 and 1982. Chair Weisenmiller holds a Doctorate in Chemistry and a Masters in Energy and Resources from University of California Berkeley and received his Bachelor of Science in Chemistry from Providence College.

1. Health & Saf. Code, div. 25.5, §§ 38500 *et seq.*
2. The Air Resources Board's full implementation plan for achieving AB 32's goals is set forth in the Board's *Climate Change Scoping Plan* (December 2008), which is generally referred to simply as the "Scoping Plan". The Scoping Plan is available at www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf.
3. In March 2012, Governor Brown signed Executive Order B-16-12, which set targets for advancing electric vehicles in California, including having infrastructure in place to support 1 million electric vehicles by 2020 and 1.5 million by 2025. Further, the Executive Order sets a target for reducing greenhouse gas emissions from California's transportation sector to 80 percent less than 1990 levels by 2050. See Governor's Exec. Order No. B-16-12 (Mar. 23, 2012), available at: <http://gov.ca.gov/news.php?id=17472>.
4. Mary D. Nichols, Chairman, California Air Resources Board, testimony before the Senate Select Committee on Environment, Economy & Climate Change (Mar. 27, 2012), available at: www.arb.ca.gov/cc/capandtrade/nicholstestimony.pdf.
5. Stats. 2011, ch. 1.
6. The calculation does not include existing generation. It uses the California Energy Demand Forecast 2012-2022, which was developed by CEC staff as part of the Commission's 2012 Integrated Energy Policy Report update process. See California Energy Commission, *Revised California Energy Demand Forecast 2012-2022*, CEC Doc. No. CEC-200-2012-001-SD (Draft, Mar. 23 2012) and related documentation, available at: www.energy.ca.gov/2012_energypolicy/documents/index.html.
7. California's Clean Energy Future, *Renewable Energy* (Mar. 30, 2012), available at: www.cacleanenergyfuture.org/documents/RenewableEnergy.pdf, at p. 4.

8. For definitions of these terms, see California Energy Commission, *Renewable Energy Program Overall Program Guidebook*, CEC Doc. No. CEC-300-2012-003-CMF (4th Ed., May 2012), available at www.energy.ca.gov/2012publications/CEC-300-2012-003/CEC-300-2012-003-CMF.pdf. Also, there are a number of types of hydropower: run-of-river, conduit, pondage (reservoir-based) and pumped storage. Not all hydro is controllable.
9. California Public Utilities Commission, *Renewables Portfolio Standard Quarterly Report, 4th Quarter 2011, Cost Reporting in Compliance with SB 836* (Q4 2011), available at: www.cpuc.ca.gov/NR/rdonlyres/3B3FE98B-D833-428A-B606-47C9B-64B7A89/0/Q4RPSReporttotheLegislatureFINAL3.pdf, at p. 4
10. According to the California Energy Commission's *2005 Integrated Energy Policy Report*, California's hydroelectric system provides valuable peaking reserve capacity, spinning reserve capacity, load following capacity, and transmission support. California Energy Commission, *2005 Integrated Energy Policy Report* CEC Document No. CEC-100-2005-007-CMF (Nov. 2005), available at: www.energy.ca.gov/2005publications/CEC-100-2005-007/CEC-100-2005-007-CMF.PDF, at p. 141. These ancillary services are provided by pondage and pumped hydropower, but not run-of-river or conduit hydropower.
11. Brooks, *DESERT: Power Outage Affecting 263 Homes, Businesses*, The Press-Enterprise (Riverside, CA) (Mar. 6, 2012), available at: www.pe.com/local-news/local-news-headlines/20120306-desert-power-outage-affecting-263-homes-businesses.ece.
12. The Brookings Institution Energy Security Initiative and the Hoover Institution Shultz-Stephenson Task Force on Energy Policy, *Assessing the Role of Distributed Power Systems in the U.S. Power Sector* (Oct. 2011), at p. 32.
13. *Id.*, Foreword at p. III.
14. *Id.* at p. 33.
15. http://fresnobeehive.com/news/2012/01/fresno_building_permits_fall_i.html.
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17. Macdonald, *Going where the grass is greener: State to give \$407K grant to local 'green academies'*, Elk Grove Citizen (Mar. 6, 2012), available at: www.egcitizen.com/articles/2012/03/06/news/doc4f4ff4b36b5b1044921462.txt.
18. Muro et al., The Brookings Institution Metropolitan Policy Program, *Sizing the Clean Economy: A National and Regional Green Jobs Assessment* (July 2011), available at: www.brookings.edu/~media/Files/Programs/Metro/clean_economy/0713_clean_economy.pdf.
19. California's Clean Energy Future, *Preliminary Estimates of Job Creation* (Jan. 10, 2012), available at: www.cacleanenergyfuture.org/documents/PreliminaryEstimatesofJobCreation.pdf.
20. *Brown Announces Clean Energy Jobs Plan*, Brown for Governor Press Release (June 14, 2012), available at: www.jerrybrown.org/Clean_Energy.
21. California Energy Commission, *2011 Integrated Energy Policy Report*, CEC Document No. CEC-100-2011-001-CM (Feb. 2012), available at: www.energy.ca.gov/2011publications/CEC-100-2011-001/CEC-100-2011-001-CMF.pdf, at p. 28.
22. For definitions, see *Overall Program Guidebook*, *supra* note 7.
23. For a definition of "qualifying facility", see the Federal Energy Regulatory Commission's "What is a qualifying facility?" webpage at www.ferc.gov/industries/electric/gen-info/qual-fac/what-is.asp.
24. For further details on the Emerging Renewables Program, see the Energy Commission's webpage at www.energy.ca.gov/renewables/emerging_renewables.
25. For further details on the Self Generation Incentive Program, see the Public Utilities Commission's webpage www.cpuc.ca.gov/PUC/energy/DistGen/sgip/.
26. For more information and status updates see the Energy Commission and Public Utilities Commission's Go Solar California website at www.gosolarcalifornia.org.
27. See Davis et al., *California's Solar Cities 2012: Leaders in the Race Towards a Clean Energy Future*, Environment California (Nov. 2012), available at: www.environmentcalifornia.org/sites/environment/files/reports/California%27s%20Solar%20Cities%202012%20-%20Final.pdf.
28. Stats. 2009, ch. 328. For further information on the CPUC's implementation of Senate Bill 32, see the CPUC's webpage at www.cpuc.ca.gov/PUC/energy/Renewables/hot/feedintariffs.htm.

29. For further information on the CPUC's implementation of the Renewable Auction Mechanism, see the CPUC's webpage at www.cpuc.ca.gov/PUC/energy/Renewables/hot/Renewable+Auction+Mechanism.htm.
30. For further information on the CPUC's implementation of the utility solar PV program, see the CPUC's webpage at www.cpuc.ca.gov/PUC/energy/Renewables/hot/Utility+PV+Programs.htm.
31. For further information on Southern California Edison's renewable standard contract, see the company's webpage at www.sce.com/EnergyProcurement/renewables/renewables-standard-contracts.htm.
32. For WDG programs, "pending projects" typically refers to facilities under contract but not yet built. For the self-generation systems, "pending projects" are those for which an applicant has submitted a request for a rebate but the project has not been installed or the request is under review.
33. On December 15, 2010, the Energy Commission adopted a memorandum of understanding between the Energy Commission and the Departments of General Services, Corrections and Rehabilitation, Transportation, Water Resources, and Fish and Game. The California State Lands Commission, the University of California, and the High Speed Rail Authority have since joined.
34. Barker et al., *Developing Renewable Generation on State Property*, California Energy Commission Staff Report, CEC Doc. No. CEC-150-2011-001 (Apr. 2011), available at: www.energy.ca.gov/2011publications/CEC-150-2011-001/CEC-150-2011-001.pdf.
35. *2011 Integrated Energy Policy Report*, *supra* note 21.
36. California Energy Commission, *Renewable Power in California: Status and Issues*, CEC Doc. No. CEC-150-2011-002-LCF-REV1 (Dec. 2011), available at: www.energy.ca.gov/2011publications/CEC-150-2011-002/CEC-150-2011-002-LCF-REV1.pdf.
37. California Energy Commission Docket No. 12-IEP-01. The Commission maintains a webpage for this proceeding at www.energy.ca.gov/2012_energypolicy/index.html.
38. The Energy Commission published a draft of the *2012 IEPR Update* for public review and comment in October, and anticipates posting the final *2012 IEPR Update* for public review and comment in January of 2012, with adoption at a Business Meeting on February 13, 2013. Further details can be found on the Commission's webpage for the proceeding at www.energy.ca.gov/2012_energypolicy/index.html.